

Abstract

Mouse is the most common tool used to control a computer. Inspired by the behavior of the mouse, the author tries to build an application to control a computer by using hand gesture captured by the video camera.

To comply this requirement, there should be a mechanism to find the hand on every frame, this process is carried out by the Haar Cascade as an object detector hand, then the detected object will be tracked using template matching method.

Hand that is successfully detected, is classified to determine the gesture that was performed by user. Application will translate hand gestures combined with location of detection into a single instruction computer mouse. Classification process was conducted by Contour Flexibility with input from the contours extracted from the hand.

This application takes advantage of the LUV color dimensions to run segmentation based on skin color and creates the mask on the detection and tracking process. In terms of speed, this application is able to perform on a frame rate up to 8 FPS. In terms of accuracy, this application is able to achieve an overall accuracy of the process up to 96% for the best case when operating on a yellow plain background. While the worst case, on backlight with the background sky conditions, the overall accuracy can drop down to 0%. This is due to imperfect contours extraction.

Keywords: Object Detection, Tracking, Contour based Classification.